SHOP LIGHTING.

In an address delivered before the members of the Western Pennsylvania Division of the National Safety Council, Pittsburg, Pa., March, 1918, by C. W. Price, the importance of good lighting in industrial establishments was discussed, and the disadvantages of poor lighting were clearly shown by some figures mentioned by Mr. Price.

A large insurance company analyzed 91,000 accident reports, for the purpose of discovering the causes of these mishaps. It was found that 10% was directly traceable to inadequate lighting and in 13.8% the same cause was a contributory factor. The British Government in a report of the investigation of causes of accidents determined a close parallel to the findings of the insurance company above quoted. The British investigators found that by comparing the four winter months with the four summer months, there were 39.5% more men injured by stumbling and falling in winter than in summer.

Mr. John Calder, a pioneer in safety work, made an investigation of accident statistics covering 80,000 industrial plants. His analysis covered 700 accidental deaths, and of these 45% more occurred during the four winter months than during the four summer months.

Mr. C. L. Eschleman, in a paper published in the proceedings of the American Institute of Electrical Engineers several years ago, reported the result of an investigation of a large number of plants in which efficient lighting had been installed. He found that in such plants as steel mills, where the work is of a coarse nature, efficient lighting increased the total output 2%; in plants, such as textile mills and shoe factories, the output was increased 10%.

In an investigation of the causes of eye fatigue, made by the Industrial Commission of Wisconsin, it was found that in a large percentage of industries, such as shoe, clothing and textile factories, the lack of proper lighting (both natural and artificial) resulted in eye fatigue and loss of efficiency. At one knitting mill, where a girl was doing close work under improper lighting conditions, her efficiency dropped 50% every day during the hours from 2:30 to 5:30 P. M.

The above mentioned incidents indicate how important a factor lighting is in the operation of the industrial plant. It has been well said, "Light is a tool, which increases the efficiency of every tool in the plant." Glare or too much light is as harmful as not enough lighting, and in no case should the eyes of the workers be exposed to direct rays, either of sun or electric light.

Windows and reflectors should always be kept clean; that is, cleaning them at least once a week, for where dust and dirt are allowed to collect, efficiency of the light is decreased as much as 25%.

Good lighting, in addition to its other marked advantages, is a strong incentive towards keeping working places clean, for it clearly exposes any place where dirt or other material has been allowed to collect. White walls and clean windows glazed with Factrolite Glass will eliminate the sun glare and increase the illumination 25 to 50 feet from the window from 38% to 72% as compared with plain glass.

Lighting is of primary importance to every employer and fully warrants a careful investigation of the subject, for there is no substitute for good lighting, and if it is not supplied the efficiency of the entire working force must suffer a serious reduction.

If you are interested in the distribution of light through Factrolite, we will send you a copy of Laboratory Report—"Factrolited."

Engineering for the Buyer

It is not enough that electrical apparatus should be carefully conceived, skillfully designed, and exactingly manufactured.

Engineering, to fulfill all its functions, must go beyond these necessary steps and do a still more enlightened service. It must *apply the apparatus to its uses*, so that not only in design and construction but in service as well, all the conditions that must be reckoned with are fully satisfied.

This function of Westinghouse application engineering covers many fields, and charges itself with many responsibilities. It is engineering that concerns itself with almost every aspect of business, central station, transportation, industrial, mining, electro-chemical, etc. It has the buyer's interest constantly at heart.

Westinghouse Application Engineering works with salesmen, with buyers, with consulting engineers, with contractors, and with service and repair men; it finds and investigates new fields; it checks the behavior of apparatus, old and new; it is a bridge over which information passes freely in both directions between Westinghouse and its thousands of clients and friends.

Be glad that you are to live and work in times when the spirit of service dominates commercial operations. The greatest change that has occurred in business in the last few decades has been in the minds of men. No longer need the buyer beware for it is now known that the seller's obligation reaches beyond the completion of the sale; and that it is both wise and right that every reasonable effort be made to give the buyer full value in both product and satisfaction. The practise of this policy requires engineering of the highest type in research, design, manufacturing and every other phase of Westinghouse operations, but nowhere to greater degree than in the field of application engineering, which is essentially engineering for the buyer.

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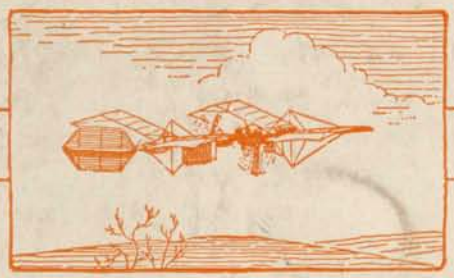

MODEL IN FLIGHT

"*The* way of an Eagle in the air"

CENTURY after century men broke their necks trying to fly. They had not troubled to discover what Solomon called "the way of an eagle in the air."

In 1891 came Samuel Pierpont Langley, secretary of the Smithsonian Institution. He wanted facts. His first step was to whirl flat surfaces in the air, to measure the air pressures required to sustain these surfaces in motion and to study the swirls and currents of the air itself. Finally, in 1896, he built a small steam-driven model which flew three-quarters of a mile.

With a Congressional appropriation of $50,000 Langley built a large man-carrying machine. Because it was improperly launched, it dropped into the Potomac River. Years later, Glenn Curtiss flew it at Hammondsport, New York.

Congress regarded Langley's attempt not as a scientific experiment but as a sad fiasco and refused to encourage him further. He died a disappointed man.

Langley's scientific study which ultimately gave us the airplane seemed unimportant in 1896. Whole newspaper pages were given up to the sixteen-to-one ratio of silver to gold.

"Sixteen-to-one" is dead politically. Thousands of airplanes cleave the air—airplanes built with the knowledge that Langley acquired.

In this work the Laboratories of the General Electric Company played their part. They aided in developing the "supercharger," whereby an engine may be supplied with the air that it needs for combustion at altitudes of four miles and more. Getting the facts first, the Langley method, made the achievement possible.

What is expedient or important today may be forgotten tomorrow. The spirit of scientific research and its achievements endure.

General Electric

General Office Company *Schenectady, N.Y.*

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